



***System Integration for Optimal  
Sensor Performance  
for the  
Air Coupled Acoustics Sensors Workshop***

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# Facilities



**BUILDING 1**

- **284,000 square feet**
- **20,000 square feet of Clean Rooms**
- **ATCF (AIRS Test & Calibration Facility)**
  - **IR Instruments Calibrated Radiometrically to Better than 3%**
  - **Precision Spectral/Spatial Calibration**



**BUILDING 2/3**

# Sonoelectronics Program



## ISSUE

Inexpensive contact and influence mines can deny the US Navy access to littoral Waters.

- Optical Imagers are expensive & seriously degraded by turbidity
- Traditional Sonars lack the resolution to Identify mines & suffer from multipath reflections.
- 80% of the time visibility in coastal areas can be expected to be less than 1 meter
- MCM Operations require covert operation. Optical and Sonar based systems are readily detected by conventional means.



## TECHNICAL SOLUTION

An acoustical camera can be made small and low power enough to be hand-held or incorporated into small MCM UUVs.

- 1 to 3 MHz operating frequency provides 1 cm resolution @ 4 m with no propagation beyond 100 m .
- MEMs approaches to high frequency transducers promise 10 to 100X improvements over current technology
- High Density Interconnects enable 16K element arrays
- Acoustical lenses provide parallel beamforming with no electrical power at low cost.

## PLANS

Provide Technology Demonstration in 2001 With Diver Hand-Held Camera

- Three to Five MEMS Alternatives
- A Single Imaging System Supports all MEMS
- Three Stages of Capability Demonstrations Maintain The Application Focus
  - '99 - 10 X 10 Capability baseline established
  - '00 - 32 X 64 sub array functionality & progress demo
  - '01 - 128 X 128 imaging system demonstrated

# Integrated Sniper Location System I-SLS



Lockheed Martin's I-SLS provides a low cost, high reliability means of detecting and locating hostile gunfire